Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

FORMING LOGICAL THINKING IN ELEMENTARY STUDENTS THROUGH THE USE OF CHESS IN COURSE AND EXTRA-COURSE ACTIVITIES

Kadyrov Kutlug Bekmurodovich
University of Management and future technologies Head of the Department of Pedagogy and Psychology, Doctor of Pedagogical Sciences (DSc), Professor
Email: bekovich_1972@mail.ru

Bobokulov Chori Urolovich
Termez University of Economics and Service
Teacher of the Department of Physical Culture
Email: boboqulovchori0@gmail.com

Abstract

This article discusses the theoretical and pedagogical foundations and practical possibilities of forming logical thinking in primary school students through the use of chess in classroom and extracurricular activities. The study scientifically analyzes the role of chess in developing students' analytical thinking, decision-making in problem situations, understanding cause-and-effect relationships, and independent thinking skills. It also shows effective forms and methods of integrating chess classes into the educational process, mechanisms for the gradual development of logical thinking through didactic games and exercises. The results of the study confirm that chess is an effective pedagogical tool for ensuring the intellectual development of primary school students, and methodological recommendations for practicing teachers are developed.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

Keywords: chess game, primary school students, logical thinking, curricular and extracurricular activities, intellectual development, analytical thinking, didactic games, pedagogical technologies, independent thinking, effectiveness of the educational process.

Introduction

The primary education stage is the most important period in which a student's thinking, worldview, and attitude to learning are formed. Especially in today's conditions, when the flow of information has increased and students' attention is easily distracted, the targeted development of logical thinking in them from an early age is one of the important factors in improving the quality of education. Logical thinking strengthens the student's intellectual activity, such as analyzing, comparing, generalizing, identifying cause-and-effect relationships, and drawing the right conclusions in problem situations. In this regard, the search for and implementation of interesting and effective pedagogical tools that encourage students to think actively, both during the lesson and in extracurricular activities, remains an urgent task. The game of chess is one of such tools, which teaches students to plan in advance, calculate options, maintain logical sequences, analyze errors, and make the right decisions.

The relevance of this topic is that, despite the high educational and intellectual potential of chess, the issue of its use as a methodological system aimed at the formation of logical thinking in classroom and extracurricular activities has not been sufficiently consistently implemented in practice. In many cases, chess classes are limited to teaching only the rules of the game or preparing for competitions, and didactic mechanisms that serve to gradually develop the student's logical operations (analysis-synthesis, comparison, generalization, classification) are not used enough. Therefore, it is important to scientifically substantiate effective forms and methods of forming logical thinking through the use of chess, integrate them seamlessly with the topics of the lesson, enrich the

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

content of extracurricular activities based on a competency-based approach, and evaluate effectiveness based on pedagogical criteria. This will serve to strengthen the academic success of primary school students, their independent thinking, and their skills in solving problem situations.

The Purpose of the Study

to identify the theoretical and pedagogical foundations of the formation of logical thinking in primary school students through the use of chess in classroom and extracurricular activities and to develop its effective forms, methods and tools.

Research Objectives

1. to analyze the pedagogical, psychological and methodological literature on the formation of logical thinking in primary school students and to identify the didactic possibilities of the chess game;
2. to develop an effective form, method and system of didactic exercises aimed at developing logical thinking through the use of chess in classroom and extracurricular activities;
3. to determine and analyze the effectiveness of the developed methodological approach in the formation of logical thinking in primary school students through practical experimental work.

Literature Review

The issue of forming logical thinking in primary school students is one of the priority areas of modern pedagogy and psychology. This problem has been studied in various disciplines, in particular, the possibilities of developing students' thinking through interactive methods, didactic games, curricular and extracurricular activities, and intellectual games have been widely covered. A.B. Umarova in her study substantiates the effectiveness of interactive methods and modern pedagogical technologies in forming logical thinking in primary school

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

native language lessons. In our previous studies, it was established that interactive methods serve to develop students' skills of analysis, comparison, and generalization, which scientifically substantiated the need to integrate intellectual games such as chess into the educational process.

The issue of forming an effective communication and educational environment in curricular and extracurricular activities is widely covered in the study of M. Muhammadyokubova. In his previous studies, the author shows that pedagogical dialogue between a teacher and a student is an important factor in the development of logical thinking. At the same time, B. Muminov analyzes the specific aspects of the formation of personal and professional responsibility in the process of extracurricular activities and justifies the fact that extracurricular activities are an important pedagogical field for increasing independent thinking and social activity of students. These circumstances further strengthen the relevance of combining chess classes with extracurricular activities.

The cognitive processes of primary school children, in particular the development of memory and thinking, are covered in the studies of N.A. Makhmudova and Ibragimova and Mukhammadjonova. These authors show on a scientific basis that memory, attention and thinking develop inextricably, and that they can be effectively developed through special classes. These aspects reveal the potential of chess in developing not only logical thinking, but also memory and attention in primary school students.

The intellectual and strategic capabilities of chess were separately studied by F. Muhammadova, and the author interprets chess as an effective tool for developing thinking. In previous studies conducted by the author, the mechanisms for developing thinking and mental abilities in primary school students through the game of chess were scientifically and practically substantiated. In these studies, the effectiveness of the game of chess in forming logical actions such as analytical thinking, planning, and understanding cause-and-effect relationships was highlighted based on experimental results. In general, the analyzed literature

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

shows that although there is a sufficient amount of research on the formation of logical thinking, the issue of using the game of chess in a systematic and methodologically based way in classroom and extracurricular activities still requires a deep scientific approach. This situation determines the relevance of this scientific article and creates the need to develop effective pedagogical mechanisms for forming logical thinking in primary school students based on chess.

Research Methodology

The methodological basis of this study is based on studying the process of forming logical thinking in primary school students based on systematic, competency-based and activity-oriented approaches. The study aimed to identify mechanisms for developing students' logical actions, such as analytical thinking, comparison, generalization, and understanding cause-and-effect relationships, by integrating the didactic potential of the chess game into classroom and extracurricular activities. The methodological approach is based on the principles of considering the student as an active subject and ensuring his or her intellectual development step by step.

In the process of research, methods of analysis, comparison, generalization, and systematization of pedagogical, psychological, and methodological literature were used as theoretical methods. With the help of these methods, the content of the concept of logical thinking, its characteristics specific to primary school age, and the intellectual and educational potential of the chess game were clarified. Also, based on existing scientific views, methodological approaches to the use of chess in classroom and extracurricular activities were analyzed, and a theoretical model of the study was developed.

Within the framework of empirical methods, pedagogical observation, interviews, questionnaires, test tasks, and pedagogical experimental work were carried out. During the experimental process, chess lessons were organized on the

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

basis of didactic exercises, combinational tasks, and problem situations aimed at developing logical thinking. The level of logical thinking of students was determined at the beginning and end of the experiment, and the results were analyzed comparatively. Mathematical and statistical analysis methods were used to process the data obtained, and the effectiveness of chess-based lessons was assessed using reliable indicators.

In general, the chosen methodology made it possible to comprehensively study the process of forming logical thinking in primary school students through the use of chess in classroom and extracurricular activities, draw scientific conclusions, and develop practical recommendations.

Research Results and Discussion

The research revealed the effectiveness of a methodological approach aimed at developing logical thinking in primary school students through the use of chess in classroom and extracurricular activities. As part of the experimental work, chess elements (movement of pieces, simple combinations, problem situations, tasks aimed at "checkmate", draw situations and tasks requiring logical consistency) were integrated into the educational process. The results showed that chess-based tasks activated students' thinking, significantly strengthened their skills in analysis, comparison, generalization, determining cause-and-effect relationships, and drawing logical conclusions.

The results of the study showed that positive changes were observed in the following main structural indicators of students' logical thinking:

1. analytical thinking - students learned to analyze the situation in parts, analyze the figure situation based on the principle of "what for what", and give a reasoned answer to questions such as "which move is more profitable?";

2. comparing options - students compared several moves and tried to choose the most optimal option, which strengthened their competence in making logical choices;

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

3. planning in advance - chess exercises formed in students such skills as predicting the outcome 2-3 moves ahead, foreseeing the consequences of a move; 4. drawing conclusions and proving - students tried to answer the question "why this particular move?" with evidence, which also strengthened their speech and logical coherence.

The effectiveness of using chess in the lesson is explained, first of all, by its didactic nature: chess situations put the student in a problematic situation, and he uses logical actions to find a solution. As a result, the student practically performs the successive stages of the thinking process (understanding the problem → viewing options → analysis → selection → checking the result). Observations during the experiment showed that chess-based tasks increase the activity of students in the lesson: they are more likely to answer questions faster, justify their opinions, and discuss in a group. This, along with logical thinking, also develops communicative competencies.

The use of chess in extracurricular activities increased the motivation of students for independent activity. In extracurricular activities, didactic exercises such as “finding a task - checking the solution”, “strong move”, “identifying a wrong move”, “combination leading to victory” created elements of research in students. In this case, students acquired the skills of analyzing their mistakes, drawing the right conclusion and trying again. In particular, exercises such as “find a wrong move” or “choose the best move” were distinguished by the activation of critical thinking and reflection, which are important components of logical thinking. The results obtained are consistent with the scientific views recorded in the literature. In particular, studies that emphasized the importance of interactive approaches and problem tasks in the formation of logical thinking were confirmed by the results of this work. The intellectual potential of the game of chess shows that it can be applied not only within the framework of club activities, but also in the teaching process on the basis of interdisciplinary integration. In this sense, the possibility that chess lessons can also have a positive effect on the performance

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

of logical tasks encountered in mathematics and native language lessons by primary school students was noticed through practical observations (for example: analyzing the condition of the problem, separating redundant information, finding logical connections).

At the same time, some problematic aspects were also observed during the research process. First, the effective organization of chess lessons requires special methodological preparation and gradualness from the teacher. Second, since primary school students can be easily distracted, the volume and complexity of the exercises should be standardized in accordance with their age. Third, if the continuity of lessons and extracurricular activities is not ensured, the acquired skills may not be formed stably. Therefore, it was considered appropriate to include elements of sequence, repeated reinforcement and reflection in the methodological approach.

In general, the results of the study show that the purposeful, systematic and methodologically based use of chess in curricular and extracurricular activities is an effective pedagogical factor in the formation of logical thinking in primary school students. Chess-based tasks activate the thinking process of students, form analytical and logical actions in them, develop the competencies of independent decision-making and substantiation of their own opinions. Therefore, the development of methodological recommendations for the integration of chess elements into curricular and extracurricular activities and the strengthening of the training of teachers are of great practical importance.

Conclusion

This scientific article theoretically and practically investigated the issue of forming logical thinking in primary school students through the use of chess in classroom and extracurricular activities. The results of the study showed that chess is an effective pedagogical tool that encourages students to think actively, directs them to analyze problem situations, and allows them to gradually form

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

logical actions. Activities based on chess had a positive effect on the development of students' skills in analysis, comparison, generalization, identification of cause-and-effect relationships, and drawing logical conclusions.

During the research, it was found that the use of chess elements in classroom activities increases students' learning activity, contributes to the conscious assimilation of knowledge, and ensures stability in performing tasks related to logical thinking. In extracurricular activities, chess exercises had an effective impact on the development of students' competencies in independent thinking, critical approach, analysis of their own mistakes and correct decision-making. In particular, didactic games and problem situations based on chess were distinguished by the fact that they activated the thinking process of students and increased intellectual interest. In general, the results of the study confirmed that the systematic, purposeful and methodologically based use of chess in lessons and extracurricular activities is an effective pedagogical condition for the formation of logical thinking in primary school students. The conclusions of the study indicate the need to more widely introduce chess elements in primary education, use them on the basis of interdisciplinary integration, and develop methodological recommendations for teachers. These scientific results can serve as a scientific and methodological basis for future research aimed at further studying the intellectual and educational potential of the game of chess.

References

1. Umarova A.B. Boshlang‘ich sinf ona tili darslarida mantiqiy tafakkurni shakllantirishga xizmat qiluvchi interaktiv usullar va texnologiyalar //Журнал научных исследований и их решений. – 2025. – Т. 4. – №. 02. – С. 554-558.
2. Muhammadyoqubova M. Dars hamda darsdan tashqari jarayonda o‘qituvchi va o‘quvchilar o‘rtasidagi muloqot, unga qo‘yiladigan talablar //PROBLEMS

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
OPEN ACCESS JOURNALS

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

AND SOLUTIONS OF SCIENTIFIC AND INNOVATIVE RESEARCH. – 2025. – T. 2. – №. 5. – C. 156-161.

3. Muminov B. Darsdan tashqari faoliyatda shaxsiy va kasbiy mas'uliyatning o'ziga xosligi. Наука и инновация 2.34 (2024): 91-92.
4. Maxmudova N.A. Xotirani rivojlantiruvchi mashg'ulotlar. Ustozlar uchun 71.3 (2025): 350-354.
5. Muhammadova. F. Shaxmat: intellekt va strategiyalar o'yini. ACTIVIST SCIENCE 1.1 (2024).
6. Urolovich, B. C. (2024). THE ROLE OF DIDACTIC GAMES IN PERSONALITY FORMATION OF PRIMARY CLASS STUDENTS. Miasto Przyszłości, 48, 1484-1490.
7. Bobokulov, C. U. (2023). THE MEANING AND IMPORTANCE OF DEVELOPING MENTAL ABILITIES OF CHILDREN OF JUNIOR SCHOOL AGE. Modern Scientific Research International Scientific Journal, 1(6), 125-132.
8. Urolovich, B. C. (2024). Using the Game in Teaching Physical Exercises to Primary Class Students. Best Journal of Innovation in Science, Research and Development, 3(3), 780-783.
9. Urolovich, B. C. (2025). FORMATION AND DEVELOPMENT OF CREATIVE THINKING THROUGH CHESS GAMES. EduVision: Journal of Innovations in Pedagogy and Educational Advancements, 1(3), 144-151.
10. Бобокулов Ч.У Бошланғич синф ўқувчиларининг ақлий қобиляти ривожланишида шахмат ўйинидан фойдаланишнинг самаралари // "FAN – SPORTGA" журнали. 2023/5. B.82-84.
11. Boboqulov Ch.U Shaxmat o'yini orqali boshlang'ich sinf o'quvchilarida fikrlash qobiliyatini rivojlantirish mexanizmlari // Ижтимоий-гуманитар фанларнинг долзарб муаммолари. № 12 (4) – 2024. B.556-560.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
OPEN ACCESS JOURNALS

Eureka Journal of Education & Learning Technologies (EJELT)

ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

12. Ibragimova Sh., Muxammadjonova X. Kichik maktab yoshidagi bolalar aqliy taraqqiyoti rivojlanishiga ta'sir etuvchi omillar. Maqola. Scientific progress. Volume 2. Issue 1. 2021. 501-505-b.
13. Турсунов, С., Пардаев, Т., & Бегимкулов, О. (2015). Узбекская национальная борьба: история и традиции (на узбекском языке). Термез.«Сурхоннашр, 34.
14. Бегимкулов, О. Ж. (2020). МОТИВАЦИЯ В СФЕРЕ ФИЗИЧЕСКОЙ КУЛЬТУРЫ И СПОРТА. Вопросы педагогики, (4-1), 36-39.
15. Бегимкулов, О. Ж. (2020). Педагогические ценности учителя физической культуры. Актуальные проблемы гуманитарных и естественных наук, (6), 113-117.
16. Babayev, A. (2025). MAKTAB YOSHIDAGI BOLALARDA HARAKATLI O 'YINLAR ORQALI FUTBOLGA TAYYORLASH VA JISMONIY SIFATLARNI RIVOJLANTIRISH. Journal of universal science research, 3(5), 130-131.
17. Mansur, U. (2023). Analysis of Boxers' Pulse Oximeter and Chronometry Ability to Perform During Boxing. ASEAN Journal of Physical Education and Sport Science, 2(1), 69-74.
18. Mansur, U. (2022). Distribution of Training Loads in The Annual Cycle of Training of Highly Qualified Boxers. ASEAN Journal of Physical Education and Sport Science, 1(1), 43-50.
19. Усмонов, М. К., & Турдиев, А. Г. (2018). Боксчининг рухий жараёнининг ривожланишини хусусиятлари. In Молодой исследователь: вызовы и перспективы (pp. 353-357).
20. Даниева, Я. Ч., Салимов, У. Ш., & Бердиева, Х. К. (2015). СПОРТИВНЫЕ МЕРОПРИЯТИЯ-ВОСПИТЫВАЮЩИЙ ФАКТОР ЧЕЛОВЕКА НОВОГО ОБЩЕСТВА. Университетский спорт: здоровье и процветание нации.-2015.

Eureka Open Access Journals
Open Access | Peer Reviewed | International Journals | Multidisciplinary Areas
Eureka Journal of Education & Learning Technologies (EJELT)
ISSN 2760-4918 (Online) Volume 2, Issue 2, February 2026

https://eurekaoa.com/index.php/2

21. Salimov, U. (2021). Analysis of the attitude of students of the Surkhandarya region to a healthy lifestyle and physical activity. Society and Innovation, 2(3).
22. Salimov, U. (2025). SPORT BO'YICHA MURABBIYLARNING ASOSIY MALAKA VA KO'NIKMALARI. Journal of universal science research, 3(5), 134-136.